FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

13 to 19 April, 2014 (Week 16)

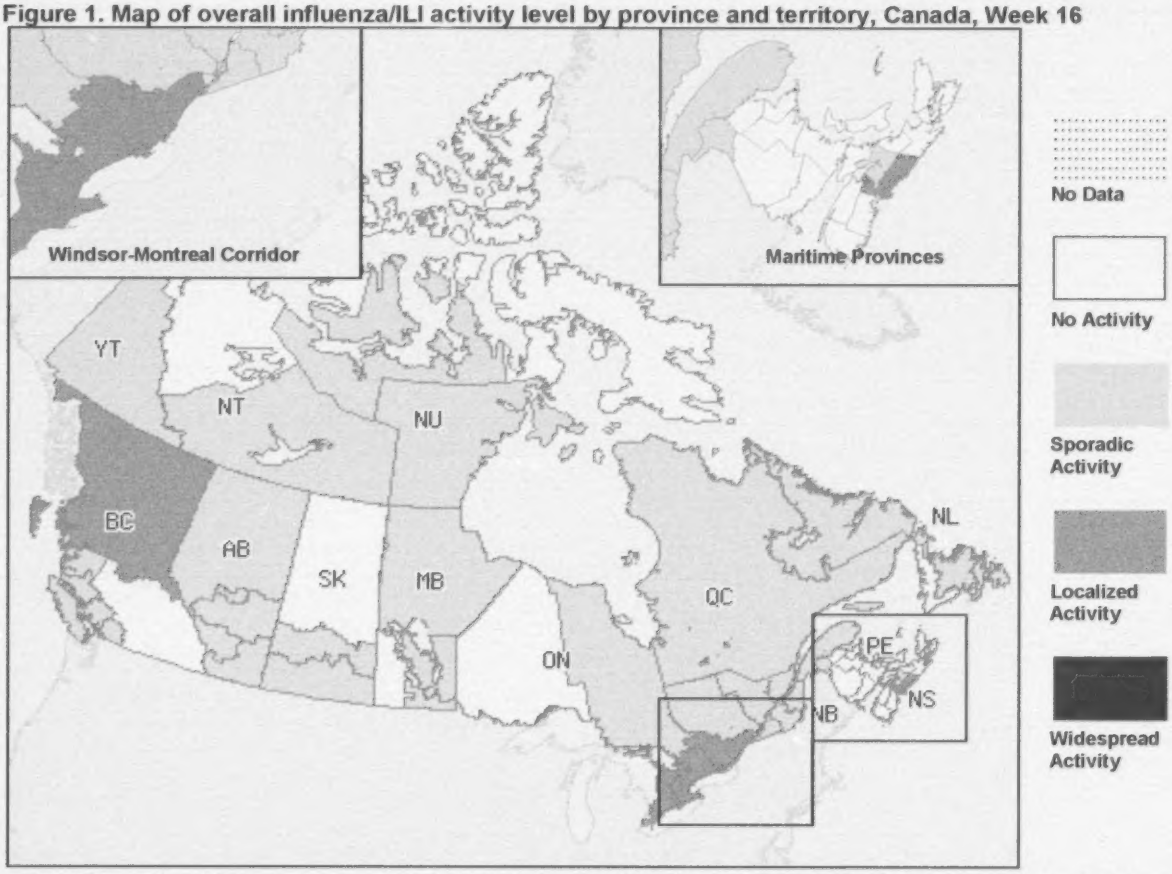
Overall Summary

- In week 16, influenza B continued to circulate in several regions across Canada. Influenza activity remains within expected levels for this time of year, and is consistent with late-season circulation of influenza B.
- While the influenza A(H1N1) virus has mostly affected adults 20-64 years of age this season, influenza B is having a greater impact on adults 65 years of age and older, as well as young persons 5 to 19 years of age.
- As of week 16, 4,211 hospitalizations and 235 deaths have been reported from participating regions, which is comparable to reports in past influenza seasons.

Influenza/ILI Activity (geographic spread)

The number of regions reporting localized or widespread influenza activity has been stable for the past eight weeks. In week 16, no region reported widespread activity and seven regions (BC(1), ON(5) and NS(1)) reported localized activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 16

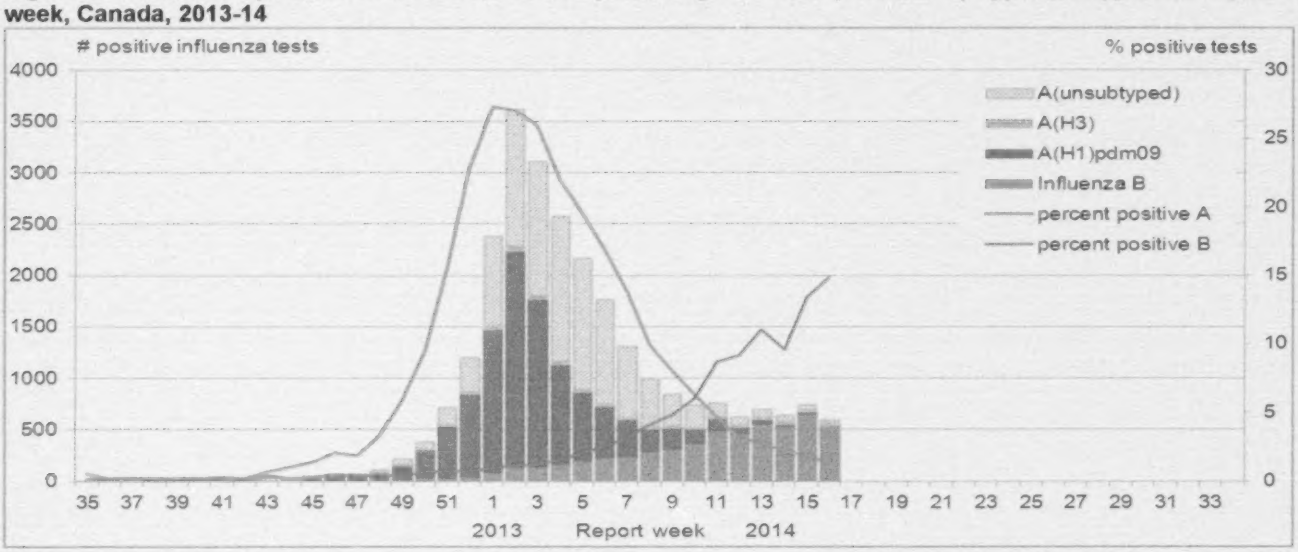


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests decreased from 736 in week 15 to 587 in week 16, although this represented an increasing percentage of positive tests (16.1%) (Figure 2). Influenza B remained the predominant virus in week 16, representing 92% of influenza detections. Influenza B continues to circulate in many regions across Canada. Influenza detections are declining in Newfoundland & Labrador, but increasing in other Atlantic provinces. Detections are stable in Quebec, and after a sharp increase over recent weeks, detections in Ontario declined in week 16. British Columbia, Alberta and Saskatchewan have also reported increases in influenza B detections in recent weeks (Table 1). Significantly greater proportions of influenza B cases have been ≥65 years of age and 5-19 years of age compared to cases of A(H1N1)pdm09. Among cases for which information on age and type/subtype has been received, 40.2% of the cases in week 16 were ≥65 years of age compared to 19.5% of cases for the season to date (Table 2).

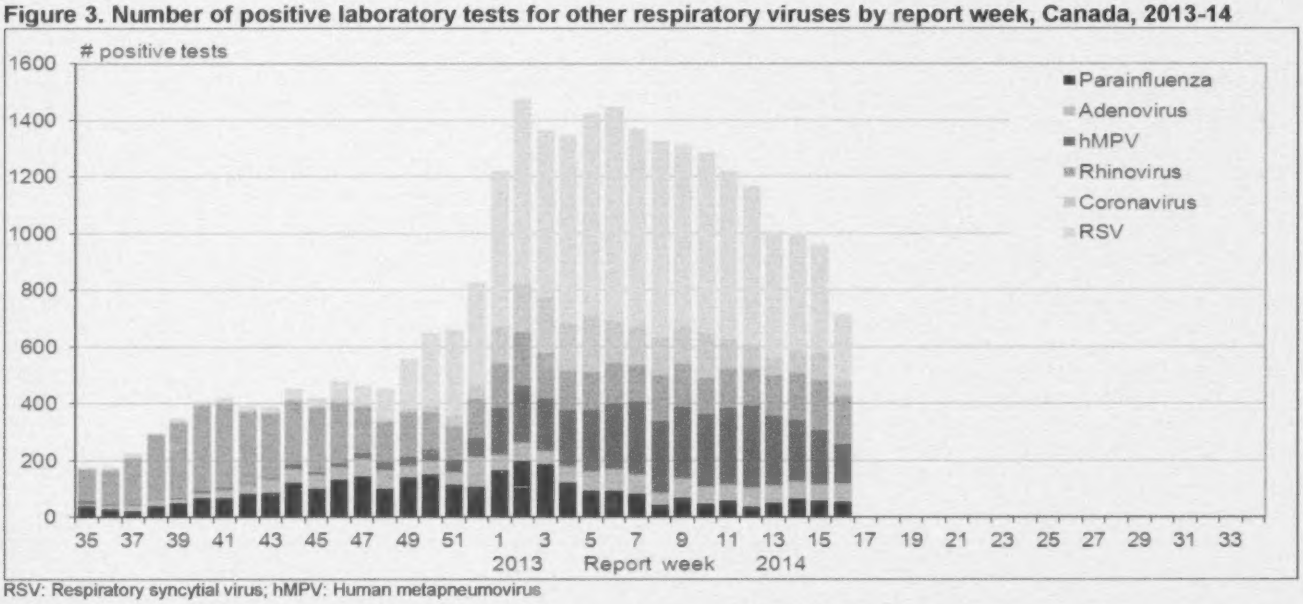
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV continued to decline from a peak in early February. The number of positive tests for parainfluenza and adenovirus have been variable in recent weeks. Detections of coronavirus have been on a downward trend since mid-January. More detections human metapneumovirus have been reported compared to the same period last season, but they continue to decline. Detections of rhinovirus have been relatively stable during the winter months, although these detections represent an increasing percentage of tests positive since early January (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (April 13 to 19, 2014)					Cumulative (August 25, 2013 to April 19, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	3	0	0	3	35	1791	1612	46	133	296
AB	14	3	7	4	36	3833	3451	68	314	305
SK	4	1	1	2	17	1380	986	8	386	98
MB	n/a	n/a	n/a	n/a	n/a	654	460	3	191	20
ON	12	4	4	4	318	5688	2483	342	2863	2177
QC	10	0	0	10	114	5334	677	4	4653	2398
NB	0	0	0	0	14	1488	370	1	1117	69
NS	2	0	0	2	7	174	134	4	36	12
PE	1	1	0	0	0	119	118	0	1	2
NL	n/a	n/a	n/a	n/a	n/a	362	104	0	258	203
Canada	**46**	**9**	**12**	**25**	**541**	**20823**	**10395**	**476**	**9952**	**5580**
Percentage[2]	7.8%	19.6%	26.1%	54.3%	92.2%	78.9%	49.9%	2.3%	47.8%	21.1%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

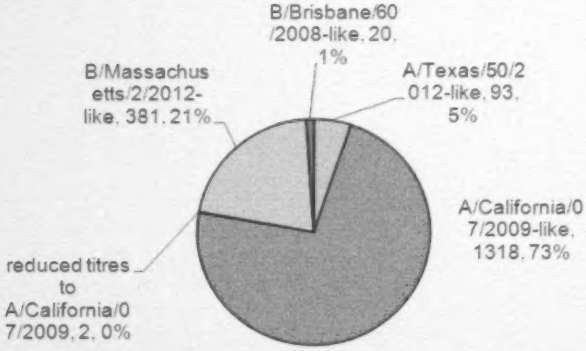
Age groups (years)	Weekly (April 13 to 19, 2014)					Cumulative (August 25, 2013 to April 19, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	4	1	0	3	18	3248	1446	40	1762	442	3690	17.2%
5-19	2	1	1	0	33	1317	706	20	591	677	1994	9.3%
20-44	5	3	0	2	50	5061	2805	42	2214	811	5872	27.4%
45-64	8	0	0	8	65	4442	2384	56	2002	1135	5577	26.0%
65+	12	0	7	5	113	2524	997	149	1378	1668	4192	19.5%
Unknown	0	0	0	0	1	136	102	21	13	6	142	0.7%
Total	31	5	8	18	280	16728	8440	328	7960	4739	21467	100.0%
Percentage[2]	10.0%	16.1%	25.8%	58.1%	90.0%	77.9%	50.5%	2.0%	47.6%	22.1%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 1,814 influenza viruses [93 A(H3N2), 1,320 A(H1N1)pdm09 and 401 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Twenty influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 1,814



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 1,557 influenza viruses for resistance to oseltamivir and all but two were sensitive. All 1,479 viruses tested for resistance to zanamivir were sensitive. All 1,474 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

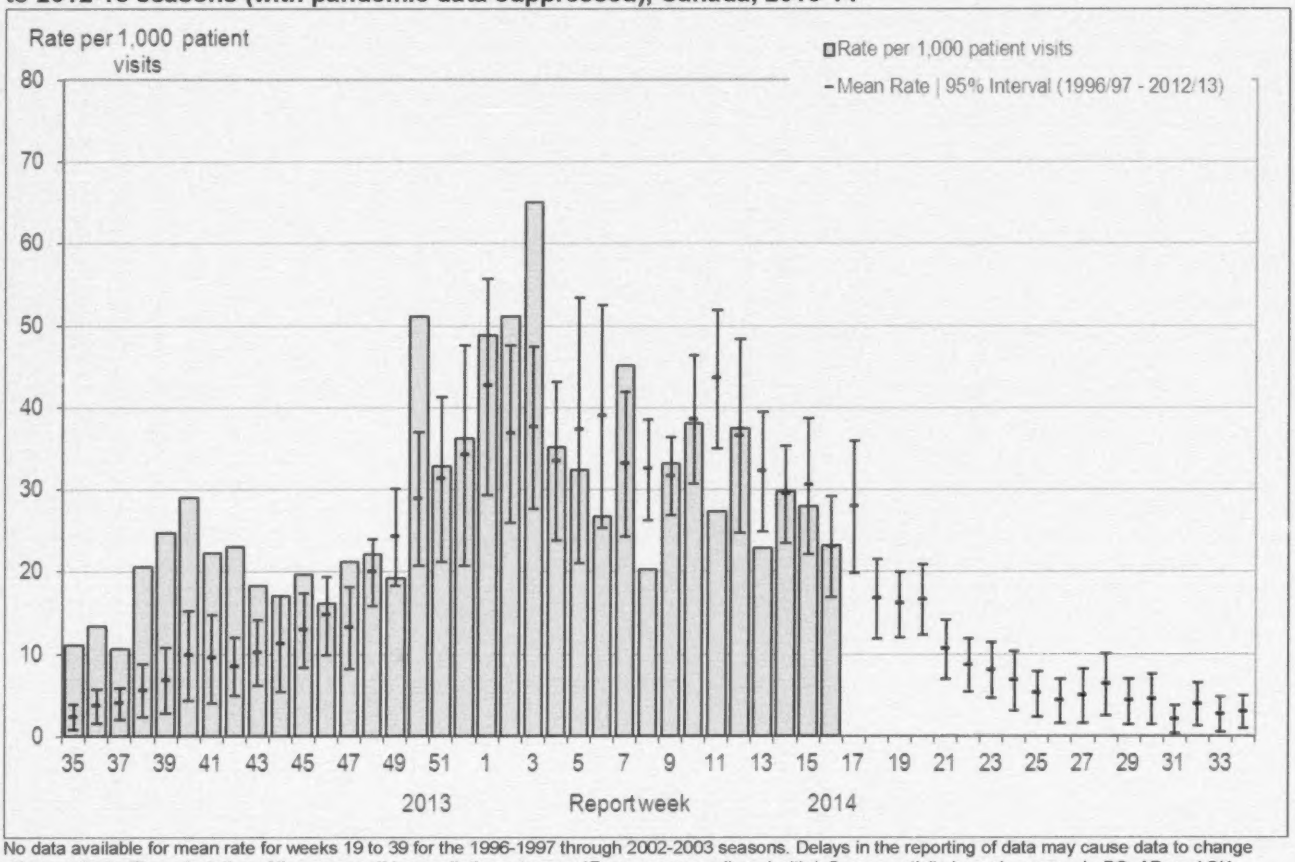
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	75	0	70	0	119	119 (100%)
A (H1N1)	1216	2 (0.2%)	1180	0	1355	1355 (100%)
B	266	0	229	0	NA[1]	NA[1]
TOTAL	1557	2 (0.1%)	1479	0	1474	1474 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate decreased from 27.9 consultations per 1,000 patient visits in week 15 to 23.2 / 1,000 in week 16; which was within the expected range for week 16 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

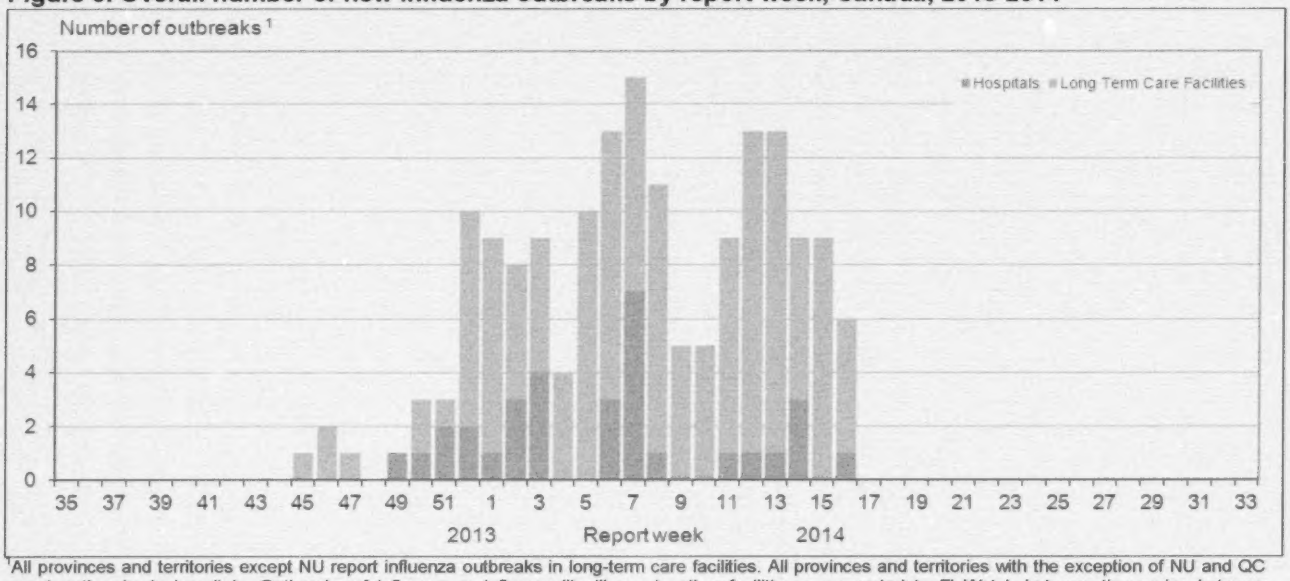


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 16, seven new influenza outbreaks were reported: five in long-term care facilities, one in a hospital (Figure 6), and one in another setting or community. Among the seven influenza outbreaks, four had data on the influenza type, and all were influenza B. One additional outbreak of influenza-like illness was reported in a school in week 16.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

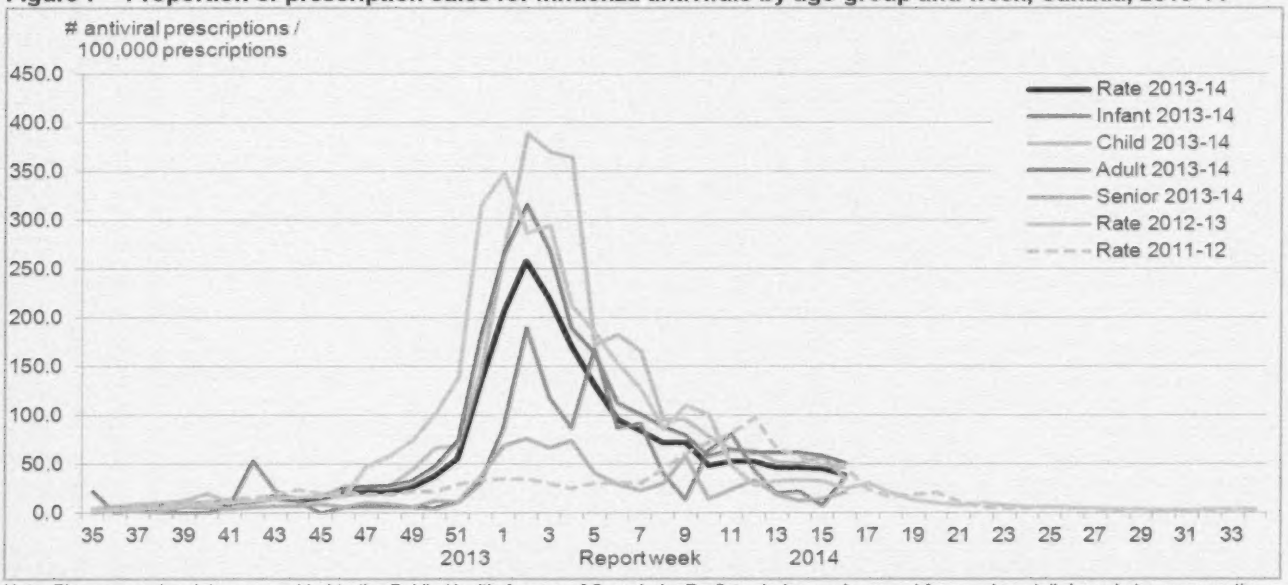


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 16, the proportion of prescriptions for antivirals was similar to the previous week. Overall this season, the largest proportion of prescriptions for antivirals has been among children 2-18 years of age and adults 19-64 years of age (Figure 7). In keeping with laboratory detections of influenza, the proportion of prescriptions for antivirals in Ontario decreased in week 16.

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 16, eight new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 14 in week 15. All the cases reported in week 16 had influenza B (Figure 8a). A greater proportion of cases with influenza B this season have been children between 2 and 10 years of age compared to A(H1N1)pdm09. One ICU admission was reported in week 16 in a child 10-16 years of age with influenza B. No deaths were reported in week 16.

To date this season, a total of 672 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 83% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 74% of cases to date (Table 4). Ninety-seven ICU admissions have been reported, of which 66 (68%) were children <5 years of age (Figure 9a). All but six were cases with influenza A, and 97% of those subtyped were A(H1N1)pdm09. Among the 94 ICU cases with available data, 60 (64%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 16, 20 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 47 in week 15 (Figure 8b). This season, a significantly greater proportion of cases of influenza B have been ≥65 years of age compared to cases of A(H1N1)pdm09. Since the beginning of March the majority of hospitalizations have been associated with influenza B, with a greater proportion of cases among adults ≥65 years of age. One ICU admission was reported in week 16, an adult 20-44 years of age with influenza B. No deaths were reported in week 16.

To date this season, 1,642 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 1,248 (76.0%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). Overall, fewer cases have been reported this season compared to the 2012-13 season, however, nearly four times more cases of influenza B have been reported compared to last year. ICU admission was required for 263 hospitalizations, all but 30 of which were cases with influenza A (126 A(H1N1)pdm09, eight A(H3N2) and 99 A(unsubtyped)). Approximately 80% of hospitalizations and ICU admissions were ≥45 years of age. Of the 193 ICU admissions with available information, 165 (85.5%) were reported to have at least one comorbidity and of the 219 ICU admissions with available information 156 (71.2%) reported not having been vaccinated this season. Seventy-eight deaths have been reported, all but ten with influenza A (41 A(H1N1)pdm09, three A(H3N2) and 24 A(unsubtyped)); seven cases 20-44 years of age, 32 cases 45-64 years of age and 39 cases ≥65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

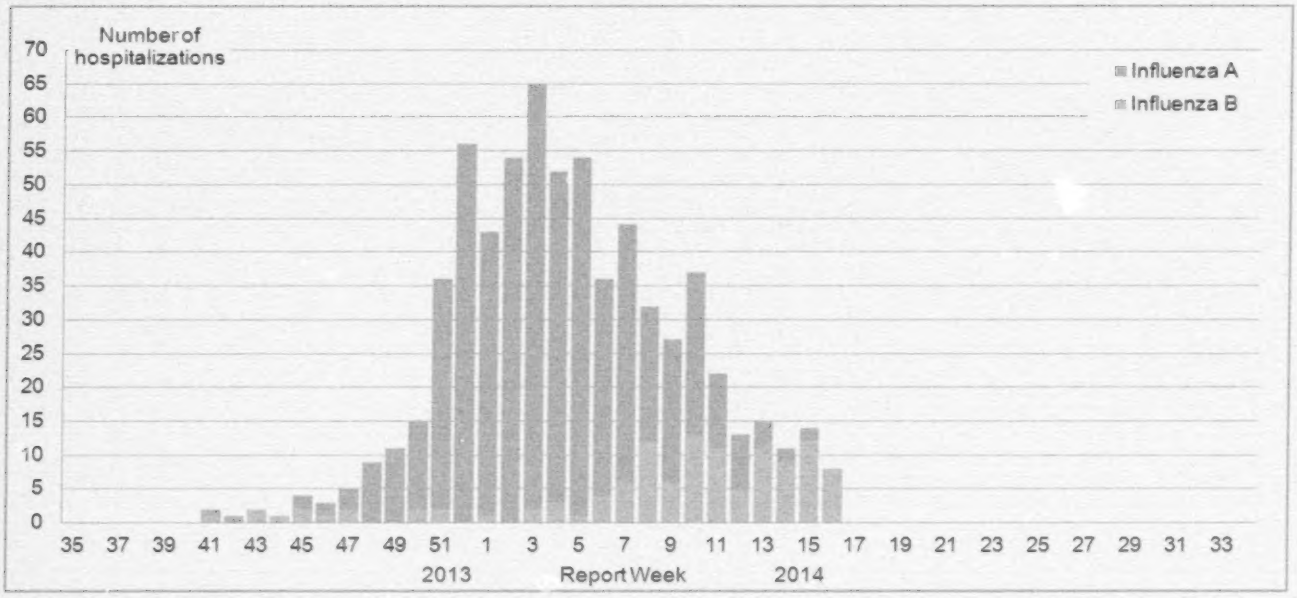
Age groups	Cumulative (25 Aug. 2013 to 19 Apr. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	104	34	0	70	7	111 (17%)
6-23m	162	51	1	110	21	183 (27%)
2-4y	166	55	3	108	35	201 (30%)
5-9y	83	27	1	55	42	125 (19%)
10-16y	40	14	1	25	12	52 (8%)
Total	555	181	6	368	117	672
% [1]	82.6%	32.6%	1.1%	66.3%	17.4%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

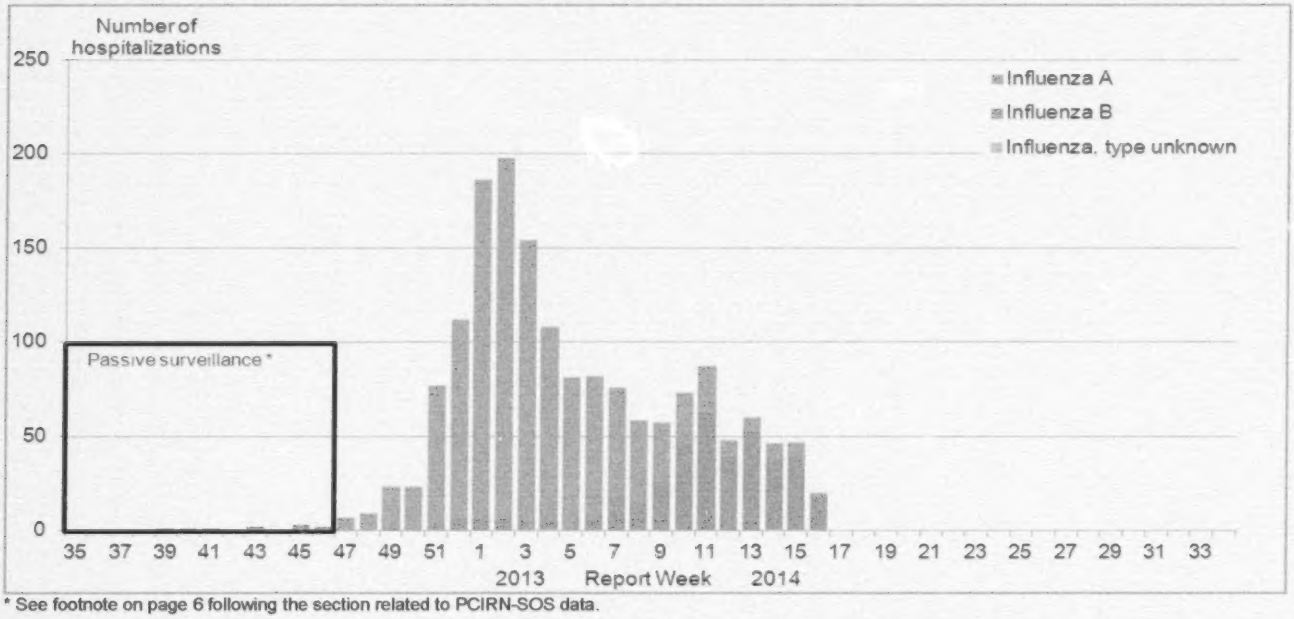
Age groups (years)	Cumulative (25 Aug. 2013 to 19 Apr. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	13	5	0	8	2	15 (1%)
20-44	265	142	6	117	28	293 (18%)
45-64	487	235	9	243	90	577 (35%)
65+	478	225	50	203	272	750 (46%)
Total	1243	607	65	571	392	1635
% [1]	76%	49%	5%	46%	24%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Two cases for which the influenza type has not yet been reported, and five cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



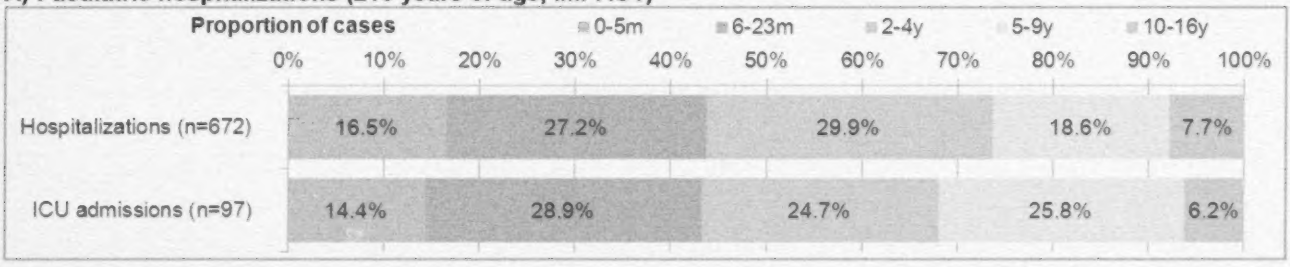
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



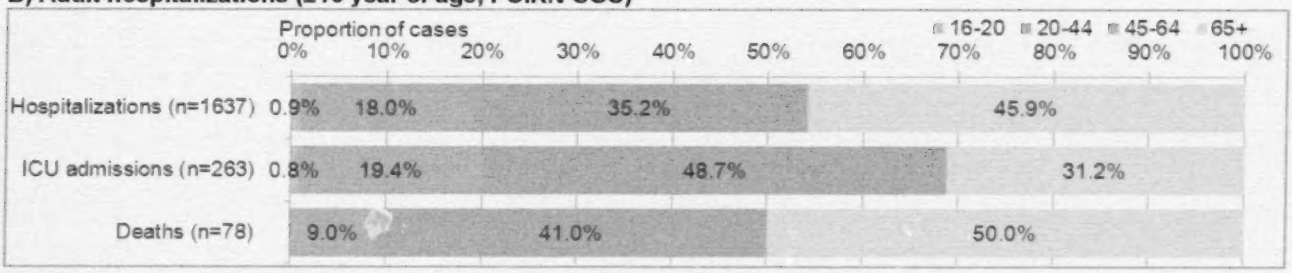
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 16, 112 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* As with other surveillance indicators in week 16, the majority were cases of influenza B (92, 82.1%). One ICU admission was reported in week 16, an adult ≥65 years of age with influenza A. Eight deaths were reported this week; two adults 45-64 years of age and six adults ≥65 years of age, all with influenza B. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 4,211 influenza-associated hospitalizations have been reported, 83.6% with influenza A. The majority (59.0%) of hospitalizations have been cases 45 years of age of older. A significantly greater proportion of cases of influenza B have been ≥65 years of age, and 5-19 years of age, compared to cases of A(H1N1)pdm09 this season (Table 6). A total of 343 ICU admissions have been reported this season, of which 64.7% were adults 20-64 years of age. A total of 235 deaths have been reported. A slightly higher proportion of deaths has been among adults ≥65 years of age (47.2%) followed by adults 20-64 years of age (44.6%). In keeping with the late-season circulation, influenza B has been increasingly reported among hospitalized cases of influenza. To date this season, influenza B has been reported in 16.4% of hospitalizations and 15.3% of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 19 Apr. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	606	286	10	310	77	683 (16%)
5-14	132	64	6	62	79	211 (5%)
15-19	35	20	3	12	4	39 (1%)
20-44	603	421	4	178	45	648 (15%)
45-64	1102	697	27	378	138	1240 (29%)
65+	908	460	79	369	338	1246 (30%)
Unknown	134	99	3	32	10	144 (3%)
Total	3520	2047	132	1341	691	4211
Percentage[1]	83.6%	58.2%	3.8%	38.1%	16.4%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Six new cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report. Globally to April 24, 2014, the WHO has been informed of a total of 427 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 146 deaths.

PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Eleven new laboratory-confirmed cases of MERS-CoV have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 254 laboratory-confirmed cases of infection with MERS-CoV, including 93 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.